C L A I M S

1. A method of producing tyres for vehicle wheels, comprising the steps of:
- disposing a carcass structure (3) having the shape of a cylindrical sleeve on a drum (14) consisting of a distal half (14b) and a proximal half (14a) both carried by a support structure (15);
- disposing a belt structure (4) coaxially around the carcass structure (3);
- moving the proximal and distal halves (14a, 14b) mutually close, from a building condition to a shaping condition, to cause a radial expansion of an intermediate portion of the carcass structure (3) until bringing said intermediate portion into contact with an inner surface of the belt structure (4), in which during mutual moving close of the proximal and distal halves (14a, 14b), the proximal half (14a) keeps a fixed axial positioning with respect to the support structure (15);
- transferring said drum (14) in the shaping condition in front of at least one unit (31) for application of at least one elongated element of elastomeric material in the form of circumferential coils, which unit is adapted to form at least one component (5, 6) of said tyre (2) at a position external to said carcass structure (3).

2. A method as claimed in claim 1, wherein mutual approaching of the proximal and distal halves (14a, 14b) involves a translation of the support structure (15) towards the distal half (14b), and a translation of the distal half (14b) towards the support structure (15) by an amount proportional to the translation carried out by the support structure (15) with respect

to a median plane (P) between said halves (14a, 14b).

3. A method as claimed in claim 2, wherein translation of the distal half (14b) towards the support structure (15) occurs by an amount corresponding to twice the translation carried out by the support structure (15) with respect to a median plane (P) between said halves (14a, 14b).

4. A method as claimed in claim 1, wherein mutual approaching of the proximal and distal halves (14a, 14b) involves a translation of the belt structure (4) towards the support structure (15), and a translation of the distal half (14b) towards the support structure (15) by an amount proportional to the translation carried out by the belt structure (4) towards the support structure (15).

5. A method as claimed in claim 4, wherein translation of the distal half (14b) towards the support structure (15) takes place by an amount corresponding to twice the translation carried out by the belt structure (4) towards the support structure (15).

6. A method as claimed in claim 1, wherein translation of the support structure (15) is carried out through an actuating unit (20) carrying said support structure (15).

7. A method as claimed in claim 1, further comprising the step of carrying out an angular correction oscillation of the support structure (15) to dispose a geometric axis of the drum (14) in a pre-set orientation, coincident with a geometric axis of the belt structure (4).

8. A method as claimed in claim 7, further comprising the steps of:
- acquiring identification data of the drum (14);
- selecting from a plurality of pre-set angular correction values, a value combined with the detected identification data;
- carrying out the angular correction oscillation in conformity with the selected value depending on the detected identification values.

9. A method as claimed in claim 7, further comprising the steps of:
- detecting the orientation of the geometric axis of the drum (14);
- comparing the detected orientation with the value of the pre-set orientation;
- carrying out the angular correction oscillation when the detected value diverges from the pre-set value more than a predetermined tolerance threshold.

10. A method as claimed in claim 1, wherein said component comprises a tread band (5), application of the elongated element being carried out at a position radially external to the belt structure (4).

11. A method as claimed in claim 1, wherein said at least one component comprises the sidewalls (6), application of the elongated element being carried out at positions axially external to the carcass structure (3).

12. A method as claimed in claim 1, wherein the step of disposing the carcass structure (3) on the drum (14) is carried out through assembling of the components of the carcass structure itself on the drum (14).

13. A method as claimed in claim 1, wherein before disposing the carcass structure (3) on the drum (14), a step of transferring the drum (14) to a feeding station (13) for the components of said carcass structure (3) is carried out.

14. An apparatus for producing tyres for vehicle wheels, comprising:
- a drum having a distal half (14b) and a proximal half (14a) both carried by a support structure (15);
- transfer devices (30) to dispose a belt structure (4) coaxially around a carcass structure (3) set on the drum (14) in the form of a cylindrical sleeve;
- translation devices (18) to move the proximal and distal halves (14a, 14b) close to each other from a building condition to a shaping condition;
- at least one unit (31) for application of an elongated element of elastomeric material, set to interact with said drum (14) so as to obtain laying of said elongated element in circumferential coils externally of the carcass structure (3), to make at least one component (5, 6) of said tyre (2);
wherein the proximal half (14a) is axially fixed with respect to the support structure (15).

15. An apparatus as claimed in claim 14, further comprising:
- an actuating unit (20) carrying the support structure (15);
- a control unit (20a) operating on the actuating unit (20) and the translation devices (18), to cause a translation of the support structure (15) towards the distal half (14b), and a simultaneous translation of the distal half (14b) towards the support structure (15) by an amount proportional to the translation

carried out by the support structure (15) with respect to a median plane (P) between said halves (14a, 14b).

16. An apparatus as claimed in claim 15, wherein the control unit (20a) is programmed to determine a translation of the distal half (14b) towards the support structure (15) by an amount corresponding to twice the translation carried out by the support structure (15) with respect to a median plane (P) between said halves (14a, 14b).

17. An apparatus as claimed in claim 14, further comprising:
- an actuating unit (20) carrying the support structure (15);
- a control unit (20a) operating on the actuating unit and the translation devices (18), to cause a translation of the belt structure (4) towards the support structure (15), and a simultaneous translation of the distal half (14b) towards the support structure (15) by an amount substantially proportional to the translation carried out by the belt structure (4) towards the support structure (15).

18. An apparatus as claimed in claim 17, wherein the control unit (20a) is programmed to cause translation of the distal half (14b) towards the support structure (15) by an amount corresponding to twice the translation carried out by the belt structure (4) towards the support structure (15).

19. An apparatus as claimed in claim 15 or 17, wherein the actuating unit (20) comprises a robotized arm (21) supporting the drum (14).

20. An apparatus as claimed in claim 19, wherein the drum (14) is removably associated with the robotized arm (21).

21. An apparatus as claimed in claim 18, comprising a plurality of drums (14) different from each other, to be brought individually in engagement with the actuating unit (20).

22. An apparatus as claimed in claim 19, further comprising a control unit (20a) operating on the actuating unit (20) to submit the drum (14) to an angular correction oscillation to dispose a geometric axis of the drum (14) in a pre-set orientation, coincident with the geometric axis of the belt structure (4).

23. An apparatus as claimed in claim 22, wherein said control unit (20a) comprises:
- a memory containing a plurality of angular correction values each combined with the identification data of a drum (14) associable with the robotized arm (21);
- an acquisition block to acquire the identification data of the drum (14) associated with the robotized arm (21);
- a selecting unit to select from said plurality of angular correction values, the value combined with the detected identification data;
- said control unit (20a) carrying out the angular correction oscillation in response to the value selected from the selecting unit.

24. An apparatus as claimed in claim 22, further comprising:
- a device detecting the orientation of the drum (14);

- a comparator to compare the orientation detected by the control device with the value of the pre-set orientation;
wherein said control unit (20a) carries out the angular correction oscillation when the detected value diverges from the pre-set value more than a predetermined tolerance threshold.

25. An apparatus as claimed in claim 14, further comprising a feeding station (13) to supply the components of said carcass structure (3) set to interact with the drum (14) to form the carcass structure (3) on the drum itself.